Appendix

Exam Objectives for Server+ Certification

The following table lists the domains covered on the Server+ Certification exam and the weight assigned to each domain. The remainder of this appendix lists each objective covered in the exam and indicates where the objective is covered in this book. For more information about Server+ Certification see the CompTIA web site at *www.comptia.org*.

On the CompTIA web site, there is also a link for the Server+ Concepts and Skills. These are an expansion to the main test objectives, and provide more detail on some of the topics you should know. This book addresses both the certification objectives and the Concepts and Skills

Domain	% of Examination (approximate)
1.0 Installation	17%
2.0 Configuration	18%
3.0 Upgrading	12%
4.0 Proactive Maintenance	9%
5.0 Environment	5%
6.0 Troubleshooting and Problem Determination	27%
7.0 Disaster Recovery	12%

DOMAIN 1.0: INSTALLATION

Objective	Chapter: Section
1.1 Conduct pre-installation planning activities • Plan the installation • Verify the installation plan • Verify hardware compatibility with operating system • Verify power sources, space, UPS, and network availability • Verify that all correct components and cables have been delivered	• Chapter 2: Determining the Business Purpose, Anticipating User Demand, Planning for Interoperability, Server Placement, Creating the Network Diagram, Planning Physical Site Readiness, Power • Chapter 4: Uninterruptible Power Supply, Site Preparation • Chapter 6: Making an Inventory
1.2 Install hardware using ESD best practices (boards, drives, processors, memory, internal cable, etc.) • Mount the rack installation • Cut and crimp network cabling • Install UPS • SCSI ID configuration and termination • Install external devices (e.g., keyboards, monitors, subsystems, modem rack, etc.) • Verify power-on via power-on sequence	• Chapter 6: Avoiding Electrostatic Discharge • Chapter 4: The Rack, Cable Management, The KVM • Chapter 7: Network Cabling, How to Cut and Crimp RJ-45 Connectors, Networking with a Modem Pool • Chapter 4: Supplying Power to the Server, Uninterruptible Power Supply • Chapter 6: Upgrading the UPS • Chapter 5: SCSI Configuration, SCSI Termination • Chapter 3: CMOS, BIOS, and POST

DOMAIN 2.0: CONFIGURATION

Objective	Chapter: Section
2.1 Check/upgrade BIOS/firmware levels (system board, RAID, controller, hard drive, etc.)	• Chapter 3: CMOS, BIOS, and POST • Chapter 5: SCSI Configuration
2.2 Configure RAID	• Chapter 5: RAID
2.3 Install NOS • Configure network and verify network connectivity	• Chapter 8: Installing NetWare 5.1, Installing Linux, Installing OS/2, Installing Windows NT 4.0, Installing Windows 2000 • Chapter 7: Verifying TCP/IP Configuration and Connectivity
2.4 Configure external peripherals (UPS, external drive subsystems, etc.)	• Chapter 4: Uninterruptible Power Supply, Failover for the UPS • Chapter 5: Fibre Channel, RAID

Objective	Chapter: Section
2.5 Install NOS updates to design specifications	• Chapter 6: Pre-Installation Tasks, Test and Pilot • Chapter 8: Updating the Operating System • Chapter 12: Check Log Records
2.6 Update manufacturer specific drivers	• Chapter 6: Upgrading Adapters, Hands-on Project 6-7
2.7 Install service tools (SNMP, backup software, system monitoring agents, event logs, etc.)	• Chapter 9: Monitoring Protocols, SNMP, DMI • Chapter 10: Disaster Planning, Backup Software, SNMP Settings • Chapter 12: Server Messages
2.8 Perform server baseline	• Chapter 11: Establishing a Baseline
2.9 Document the configuration	• Chapter 12: Check Log Records

DOMAIN 3.0: UPGRADING

Objective	Chapter: Section
3.1 Perform full backup • Verify backup	• Chapter 10: Backup Software
3.2 Add Processors • On single processor upgrade, verify compatibility • Verify N 1 stepping • Verify speed and cache matching • Perform BIOS upgrade • Perform OS upgrade to support multiprocessors • Perform upgrade checklist, including: locate/obtain latest test drivers, OS updates, software, etc.; review FAQs, instruction, facts and issues; test and pilot; schedule downtime; implement ESD best practices; confirm that upgrade has been recognized; review and baseline; document upgrade. (This upgrade checklist applies to each hardware upgrade that follows. Note that not all updates require each item on the checklist. For example, hard disk upgrades do not usually require an updated driver.)	• Chapter 6: Upgrading the Processor, Processor Slots and Sockets, Updating the BIOS • (Performing upgrade checklist items) Chapter 6: Most of the chapter • Chapter 8: Updating the Operating System • Chapter 11: Establishing a Baseline • Chapter 12: Check Log Records

Objective	Chapter: Section
3.3 Add hard drives • Verify that drives are the appropriate type • Confirm termination and cabling • For ATA/IDE drives, confirm cabling, master/slave and potential cross-brand compatibility • Upgrade mass storage • Add drives to array • Replace existing drives • Integrate into storage solution and make it available to the operating system • Perform upgrade checklist	• Chapter 5: ATA Cable, Master, Slave, and Cable Select, SCSI Configuration, SCSI Cables and Connectors, SCSI Termination, Drive Configuration (SCSI ID and LUN), Fibre Channel • Chapter 10: Hard Disk, Hard Disk Solutions, Add or Replace Hard Disks
3.4 Increase memory • Verify hardware and OS support for capacity increase • Verify memory is on hardware/vendor compatibility list • Verify memory compatibility (e.g., speed, brand, capacity, EDO, ECC/non-eCC, SDRAM/RDRAM) • Perform upgrade checklist • Verify that server and OS recognize the added memory • Perform server optimization to make use of additional RAM	• Chapter 3: Memory • Chapter 6: Upgrading Memory, Identifying Memory • Chapter 12: Memory
3.5 Upgrade BIOS/firmware • Perform upgrade checklist	• Chapter 3: CMOS and BIOS • Chapter 6: Updating the BIOS
3.6 Upgrade adapters (e.g., NICs, SCSI cards, RAID, etc.) • Perform upgrade checklist	• Chapter 6: Upgrading Adapters
3.7 Upgrade peripheral devices, internal and external • Verify appropriate system resources (e.g., expansion slots, IRQ, DMA, etc.) • Perform upgrade checklist	• Chapter 6: Verifying System Resources
3.8 Upgrade system monitoring agents • Perform upgrade checklist	• Chapter 9: Monitoring Protocols, SNMP
3.9 Upgrade service tools (e.g., diagnostic tools, EISA configuration, diagnostic partitio, SSU, etc.)	• Chapter 10: SNMP Settings, Server Management Software • Chapter 12: System and Hardware Diagnostic Utilities
3.10 Upgrade UPS • Perform upgrade checklist	• Chapter 4: Uninterruptible Power Supply, Site Preparation • Chapter 6: Upgrading the UPS

DOMAIN 4.0: PROACTIVE MAINTENANCE

Objective	Chapter: Section
4.1 Perform regular backup	• Chapter 10: Develop a Backup Strategy
4.2 Create baseline and compare performance	• Chapter 11: Establishing a Baseline
4.3 Set SNMP thresholds	• Chapter 9: SNMP
4.4 Perform physical housekeeping	• Chapter 2: Planning Physical Site Readiness • Chapter 10: Physical Care and Maintenance • Chapter 12: Come to Your Senses
4.5 Perform hardware verification	• Chapter 6: Test and Pilot
4.6 Establish remote notification	• Chapter 6: Notifying Users • Chapter 9: Monitoring Agents • Chapter 10: SNMP Settings

DOMAIN 5.0: ENVIRONMENT

Objective	Chapter: Section
5.1 Recognize and report on physical security issues • Limit access to server room and backup tapes • Ensure physical locks exist on doors • Establish anti-theft devices for hardware (lock server racks)	• Chapter 2: Planning a Secure Location • Chapter 10: Storing Backups
5.2 Recognize and report on server room environmental issues (temperature, humidity/ESD/power surges, back-up generator/fire suppression/flood considerations)	• Chapter 2: Planning Physical Site Readiness, Power, Availability, Disaster Planning

DOMAIN 6.0: TROUBLESHOOTING AND PROBLEM DETERMINATION

Objective	Chapter: Section
6.1 Perform problem determination • Use questioning techniques to determine what, how, when • Identify contact(s) responsible for problem resolution • Use senses to observe problem (e.g., smell of smoke, observation of unhooked cable, etc.)	• Chapter 12: Troubleshooting Logic and Problem Determination, Investigation, Check Log Records, Exactly What Happens? How Does it Happen? When Does it Happen?, Come to Your Senses
6.2 Use diagnostic hardware and software tools and utilities • Identify common diagnostic tools across the following OS: Microsoft Windows NT/2000; Novell NetWare, UNIX, Linux, IBM OS/2 • Select the appropriate tool • Use the selected tool effectively • Replace defective hardware components as appropriate • Identify defective FRUs and replace with correct part • Interpret error logs, operating system errors, health logs, and critical events • Use documentation from previous technician successfully • Locate and effectively use hot tips (e.g., fixes, OS updates, E-support, web pages, CDs) • Gather resources to get problem solved - Identify situations requiring call for assistance - Acquire appropriate documentation • Describe how to perform remote troubleshooting for a wake-on-LAN • Describe how to perform remote troubleshooting for a remote alert	• Chapter 12: Diagnostic Tools, Network Diagnostic Tools, Connectivity Utilities, Operating System Utilities, System Hardware and Diagnostic Utilities, Troubleshooting Specific FRUs, Check Log Records, Server Messages, Getting Help, Remote Administration, • Chapter 6: Upgrading the Processor, Upgrading Memory, Replacing the Power Supply, Upgrading Adapters
6.3 Identify bottlenecks (e.g., processor, bus transfer, I/O, disk I/O, network I/O, memory)	• Chapter 11: What is a Bottleneck? • Chapter 3: Bus Interfaces, Processors, Memory • Chapter 7: Star, Tracert, Network Adapters
6.4 Identify and correct misconfigurations and/or upgrades	• Chapter 12: Entire chapter
6.5 Determine if problem is hardware, software, or virus related	• Chapter 12: Troubleshooting Logic and Problem Determination, Troubleshooting Viruses

DOMAIN 7.0: DISASTER RECOVERY

Objective	Chapter: Section
7.1 Plan for disaster recovery • Plan for redundancy (e.g., hard drives, power supplies, fans, NICs, processors, UPS) • Use the technique of hot swap, warm swap and hot spare to ensure availability • Use concepts of fault tolerance/fault recovery to create a disaster recovery plan • Develop disaster recovery plan • Identify types of backup hardware • Identify types of backup and restoration schemes • Confirm and use off-site storage for backup • Document and test disaster recovery plan regularly, and update as needed	• Chapter 2: Do We Really Need this Server Right Now?, Disaster Planning • Chapter 5: RAID-1, RAID-5, RAID-0+1 • Chapter 4: Power Supply • Chapter 10: Spare Parts, Developing a Disaster Recovery Plan, Types of Backup Hardware, Develop a Backup Strategy, Storing and Securing Backups • Chapter 7: Network Adapters • Chapter 1: Storage
7.2 Restoring • Identify hardware replacements • Identify hot and cold sites • Implement disaster recovery plan	• Chapter 3: Processors, Memory • Chapter 6: Upgrading the Processor, Upgrading the Memory, Upgrading Adapters, Replacing the Power Supply, Upgrading the UPS • Chapter 10: Spare Parts, Hot Sites, Cold Sites